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The Agricultural Student

Published monthly by
The Agricultural Student Publishing Co.

TERMS:

One Year,	\$1.00
One-half Year,	.50
Single Copies,	.15

While this paper is published with the consent and approval of the President of the University, and the officers of the School of Agriculture, the editors of this paper are alone responsible for the statements in all unsigned articles.

Address matter designed for publication to the Editor-in-Chief; business communications to the Business Manager, Agricultural Student, Columbus, Ohio.

Entered at the Postoffice, Columbus, Ohio, as second class matter.

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SUBSCRIBE for the STUDENT.

WITH this issue we begin the publication of THE AGRICULTURAL STUDENT. Another board of editors launch their frail and untried bark on the sea of journalism.

We trust the sailing will be pleasant and instructive. We doubt not that many mistakes will be made; and not being accustomed to the hidden rocks, we will encounter many difficulties. Nevertheless, with a little experience we hope to pilot the bark safely into the harbor and then to begin another voyage of longer duration in the stormier waters with heavier freight. We shall be satisfied, though our ideal be not reached, if we can aid the interest of the University and bring forth a paper which will be a credit to the students, the University and to the State.

It has been expressed on many occasions that there is need here of more journalistic work. It is our aim to diminish that deficiency. We do not claim to be skillful in literary

lines and therefore ask the co-operation of all, that possible failure may be counter-balanced by success. Our purpose shall not be to limit the paper in its scope. We hope to make the STUDENT a public affair as well as a University affair—a medium existing between the public and the University.

Therefore we ask "the work of your pen," strangers and friends, as well as students. Those who have not the power to invoke the muses or to wield the pen can at least allow their names to appear on the subscription list. If all should do the latter they would find it would be a blessing to themselves, to their University and to their country.

You, who have been so kind as to furnish us with advice will not now, we trust, be so unkind as to furnish us with no criticism.

This year will mark another epoch in the history of the University.

The departments of dairying and ceramics have been added, and no doubt will bring within a few years a large number of students.

That these two departments are needed there is no doubt; that now is the proper time for such instruction is evident from the fact that many of the young men of this state are required to seek elsewhere for instruction in these special lines.

This age is becoming an age of specialists—more so every day.

If we need specialists in a work that effects but a small percentage of our people, we certainly need specialists in a work upon which the happiness and the health of thirty million people depends.

It is being proven continually that men trained in these special lines receive a remuneration equal to or more than like vocations. Besides, if the work is honest and manly, is it not honorable? Have industry and labor lost their dignity? If not, why should we not, within a very few years have a large number of students enrolled in these departments?

Agricultural Student—Its Objects.

To bring the University and especially the School of Agriculture into closer and more friendly relations with the people, especially the farmers of the State, by better acquainting ourselves with the people and setting ourselves and our work fairly, freely and openly before them; by inviting inspection, friendly suggestions and criticisms, and by furnishing a medium through which the students and faculty of the School of Agriculture and the farmers of the State may have easy and rapid intercourse with each other. Also to give the work and teaching of the school wider scope and more extended usefulness, by bringing the results of the investigation before the men who are in the midst of a life of agricultural business, as well as to those who are preparing for such a life.

To popularize higher scientific agricultural education, not only by furnishing opportunities to the farmer of to-day, but even more by winning the coming farmer to the paths of higher scientific agriculture to the great end, that the day may come when every tiller of the soil will be a student, a scholar, a progressive agricultural scientist, a successful business man and a useful as well as a good citizen; and, that this great, conservative body of farmers, which is the foundation of our Republic, may be so thoroughly intelligent, so well grounded in eternal scientific truths, which, when united with perfect conceptions of the great moral and spiritual truths, will make such a substantial and God-like character that the foundation of this, Our Republic, may be perfect and endure in righteousness throughout all generations.

OUR DEPARTMENT EDITORS are young men, each especially well qualified for the particular work assigned him on the "STUDENT." Mr. Loomis, is a born and bred farmer, and is a junior student at the University and

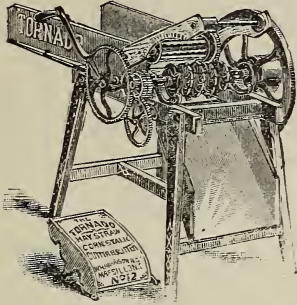
for one year chief of the department of horses and tools. Mr. Crowner, the dairy editor, is an enthusiastic dairyman, a junior student and chief of O. S. U.'s large dairy. Mr. Spiers, who is a junior student, is chief of the extensive poultry department of the University. Mr. Cunningham is especially well fitted by a course at the University and by much practical work for his work as horticultural editor. Our swine editor, Mr. Ruhlen, is a born swine handler and is well fitted for his work, both by education in school and among the porkers.

These are students who, for their special fitness, have been selected by the University authorities to take charge of and assume the responsibility of their various departments. From twenty to forty or more men and students work under their immediate direction, and thousands of dollars worth of business is annually entrusted in their hands. This guarantees their reliability and especial fitness for the work they have undertaken in connection with this journal.

THE Department of Agriculture of the O. S. U. has recently received from Prof. I. P. Roberts, of Cornell University, twenty-three samples of American feeding stuffs, comprising the following: Buckwheat bran, buckwheat hulls, bean bran, bean meal, cotton seed meal, cotton seed hulls, cotton seed oil cake, Canada fancy white bran, wheat bran, coarse middlings, dried brewers' grain, malt sprouts, gluten meal, gluten feed, choice bakers', milk-pail brand white meal, meat scraps, old process linseed cake, old process broken linseed cake, old process linseed meal, rice flour and rice bran. These samples are duplicates of the exhibit at the World's Columbian Exposition. They form a valuable addition for the student of stock-feeding.

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AGRICULTURE.

H. H. LOOMIS, EDITOR.

Dynamometer Tests.

Made on University Farm August 15 and 16, 1894.

The traction of the different farm machines has not received much attention. We have been satisfied with indirect results and it seems that some interesting and useful facts might be determined by direct experiment.

To overcome the grade, 100 ft. was laid off and from the traction both ways the average was taken as the traction on level ground. Two tests were made in each case and both together with their average will be given below.

A comparison of the draft of different wagons of different diameter of wheel and width of tire and also the effect of greasing on the same.

The axle and axle box where thoroughly cleaned to start.

A New Corn Harvester and Binder

Can be seen at Deering Harvester Company's Building, 450 Dennison Avenue, Columbus, Ohio.

This Machine will be publicly tested on the Ohio State University Farm, Columbus, Ohio, this Fall. **LOOK OUT** for notice of the date, then come and see the test.

The results are given in the order that they were taken.

	FARMER'S HANDY WAGON.			FISH WAGON		
	Weight with Driver 1560			Weight with Driver 1630.		
	1	2	Aver- age.	1	2	Aver- age.
WITHOUT GREASE.						
Unloaded, dirt road	107	107	107		70	70
" corn stubble.....	170	185	182	165	150	157
Loaded, dirt road	275	262	268	200	185	192
" corn stubble.....	435	450	442	330	225	327
WITH GREASE.						
Loaded, dirt road.....	225	215	220	165	142	153
" corn stubble.....	512	462	488	370	375	372
Unloaded, dirt road	75	80	77			
" corn stubble....	162	182	177			

The dynamometer is simply a large spring balance, hence the results given above are in pounds.

We find that the Handy wagon pulled throughout the entire trial thirty-six per cent heavier.

On the dirt road	45% heavier
On the corn stubble.	27 "
Without a load.	34 "
With a load.	37 "
Load on dirt road.	41 "
Load on corn stubble.	32 "
Without load, dirt road.	52 "
Without load, corn stub.	16 "

As to the greasing, the Handy wagon went forty per cent. lighter without a load on a dirt road and only three per cent. lighter on corn stubble. With a load, twenty-two per cent. lighter on dirt road and nine per cent. lighter on corn stubble. The Fish wagon, with a load, twenty-five per cent. lighter on dirt road but seventeen per cent. heavier on corn stubble.

The corn stubble was ground from which the corn had recently been removed for soiling purposes.

To keep from tramping a road, we were compelled to extend over considerable area to make the number of experiments, and the ground was somewhat uneven. This is probably the cause of the difference in the last result.

Averaging the entire experiment, we find the greased averaged fourteen per cent. lighter than the clean axle. I would think that the clean axle would increase in draft when it was used more.

This is but one experiment and there is chance for quite a range of error. But I hope that the work will be continued, for it seems to me that this beginning shows how interesting this work becomes, and carefully worked out facts will surely be useful to the farmer.

As the University farm has now such an excellent dynamometer, there is no reason why the work should not be done by the boys here, as is the intention.

H. H. LOOMIS.

(University Farm, Aug. 25.)

HORTICULTURE.

J. F. CUNNINGHAM, EDITOR.

The Columbus Horticultural Society.

Among the different local societies and organizations that appeal to the student in the School of Agriculture, few have a stronger claim than the Columbus Horticultural Society.

This society was organized in 1845, and its object is the advancement of horticultural knowledge. Its meetings are held the last Saturday in each month. The usual place of meeting is at the State University, in Horticultural Hall, where the library of the society is kept. Several of the professors of the University, as well as many of the prominent citizens of Columbus, take an active part in the proceedings of the society.

Every student in the course in Horticulture and Forestry should become active members of this organization, and all students connected with the agricultural department should attend the meetings whenever possible.

One prominent feature of the work of the Society is the monthly report of the standing committees on fruits, vegetables, plants and flowers, and the library.

In addition, reports are also made on vegetable pathology, botany, entomology, and meteorology. During the past two or three months papers have been read before the society on the following topics: "Experience in Tomato Growing," "Carnation Rust," "Management of House Plants," "Black Knot," "The Cultivation of Wild Flowers," "Vegetal Parasitism Among Insects," "Gardener's Calendar for April," "The Effect of Fertilizers on the Physical Properties of Soils," "How I Raise Damson Plums," "Strawberries for 1894."

We repeat, no student interested in the School of Agriculture can afford to miss the monthly meetings of the Columbus Horticultural Society.

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THE DAIRY.

D. A. CROWNER, EDITOR.

Work the Bull.

Our dairy has work for a horse each day, but not enough to pay to keep one for that work alone. The work being somewhat irregular, it sometimes happened that the horses were away when one was needed for the dairy. Now, we have two service bulls who have been spending their surplus energy in pawing up their yard or in breaking down the gates.

It occurred to us that we might profitably turn one of them into a cart-horse, or better a cart-bull. Accordingly, we brought out the Shorthorn and hitched him to the cart and proceeded to teach him. In less than two weeks he would guide fairly well by the bit and lines and could be driven on the campus with a load of corn to have his picture taken.

We drive him now, with the lines, any place on the farm that we wish. He hauls all the corn for soiling thirty-one cows, as well as all the manure from the



stables. And he does all this in such a willing way; just as though he considered it his duty to provide for his family. The loads which he hauls are as heavy as any we used to haul with a 1,600 pound horse. He weighs less than 1,400 pounds.

The accompanying engraving will help to show how we manage to work the bull. By the engraving it may be seen that there is a wide strap passing

around in front of his head between his horns and eyes. This is the part of the harness by which the load is pulled. It is a copy of the old German way of hitching oxen to a load. The rest of the harness is the cart harness which we used on the horses, the head gear taking the place of the collar and hames. This head gear is made of leather and looks somewhat like a breast collar. It is

padded like the latter. It is four feet long and the padded portion is two feet long and three inches wide. Each end of the leather has a ring in it to which the cart chain may be fastened.

The straps, which are fastened to the collar and pass over the head and behind the horns, should be fifteen inches apart. These hold the collar in place. They are buckled behind the horns and on top of the head. Just below where these straps are fastened are attached the cheek straps which hold the bit. We think the cheek straps ought to be a little farther back rather than directly under the head strap, as they cover the bull's eyes if they are too far forward. These straps should be fifteen inches long.

If you have no cart we have no doubt that a common back-pad with breeching and hold-backs would take the place of the cart harness. Tugs of either rope, leather or chain might be used. This would make a harness suitable for hitching to a spring wagon or to a lumber wagon.

No one would recommend keeping a bull for work only. But it does seem that when one can be broken so easily and in so short a time, the practice of using a bull for such work should be recommended to dairy men who are working under conditions similar to ours. While it not only pays from the amount of work obtained it will also give the bull exercise and make him more docile.

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POULTRY.

C. E. SPIERS, EDITOR.

Egg Fertility.

Many articles have appeared in the various farm and poultry papers upon the fertility of eggs. Some claiming that eggs would be fertile the next day after the male birds were mated with hens, and others claiming that eggs would not be fertile for a week or two after mating. To prove this point we made an experiment, as follows:

Forty Leghorn hens were put in three pens seven by eight feet, with a run six by sixteen. Three males of the same variety were purchased and placed in the pens on the morning of February 18, 1894. These were the first males that had been on the farm, so we were sure no eggs were previously fertilized.

The following are the results:

FERTILITY OF EGGS FROM FORTY HENS BEGINNING WITH DAY OF MATING.

Date.	Total eggs.	Fertile eggs.	Non-fertile eggs.	Per cent. of fertile eggs.
Feb., 1894				
18	21	0	21	0
19	18	2	16	11
20	24	12	12	50
21	20	12	8	60
22	20	15	5	75
23	24	19	5	79
24	15	12	3	80
25	19	17	2	89
26	19	18	1	95

The next point to be determined was how long the eggs would prove fertile after the males were removed. Males were removed July 1, 1894, and the eggs saved and set for fifteen days. These are the results obtained in the same sort of pens as before:

FERTILITY OF EGGS FROM FORTY HENS, BEGINNING WITH THE DAY MALES WERE REMOVED.

Date.	Total eggs.	Fertile eggs.	Non-fertile eggs.	Per cent. of fertile eggs.
July, 1894.				
1	9	6	3	67
2	13	8	5	62
3	11	9	2	82
4	10	10	0	100
5	12	10	2	83
6	9	7	2	78
7	9	9	0	100
8	13	12	1	92
9	11	9	2	82
10	12	9	3	75
11	9	6	3	67
12	9	3	6	33
13	9	3	6	33
14	8	1	7	12
15	9	2	7	22

According to this experiment the fertility of the eggs was apparently not materially affected until the twelfth day after removing roosters.

On the twelfth day there was a marked decrease in the fertility of the eggs. Unfortunately the eggs were only saved for fifteen days, and, hence, it is not shown how long hens must be removed from the male before all eggs become infertile. It would be interesting to know how long any would prove fertile, and we intend to try it again next year.

It is evident, however, that it is not safe to sell eggs from hens that have been unmated within two weeks of such time.

Eggs, however, may be sold as fertile within a week of mating. On the fourth day seventy-five per cent. were fertile.

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SWINE.

F. RUHLEN, EDITOR.

Relative Food Value of Corn and Wheat for Hogs.

BY THE DEPARTMENT OF AGRICULTURE, OHIO STATE UNIVERSITY.

A number of favorable results with the feeding of wheat to hogs have been reported in the agricultural press by practical farmers. That wheat is good food for hogs there can be no question. That fifty-cent wheat may be profitably fed to five-cent hogs has been abundantly demonstrated. It has been equally demonstrated that fifty-cent corn may be profitably fed to five-cent hogs. The real question is, which can be most profitably fed at ruling prices, corn or wheat? Shall a farmer sell corn to buy wheat or sell wheat to buy corn to feed to hogs? Or having both, which shall he feed and which shall he sell or hold for future sale?

The present experiment was for the purpose of making a start in solving these questions. One experiment does not settle a question of this kind, and there are several questions not within the limits of this experiment, such as the best condition under which to offer the wheat. A summary of experiments shows that corn can be as profitably fed whole and dry as in any other way. It does not follow that this is the best way to feed wheat, although it may be. In this experiment the corn fed whole and dry was almost completely masticated. No kernels of corn passed through the hog whole, and only occasionally were pieces of corn recognizable in the dung. In the case of the wheat, however, fed in the same manner, much of it was not properly masticated, as many whole kernels of wheat were to be found in the dung. Experiments just reported from the South Dakota Experiment Station shows a gain of two and one-half cents per bushel from feeding wheat ground over feeding it whole — not enough difference to pay the cost of grinding.

Nine high grade Poland China hogs, six barrows and three sows, whose average weight was 135 pounds each, were fed during a preliminary week on corn and wheat, half and half by weight. They were then divided into three lots, with barrows and one sow in each lot, due regard being given to weight and apparent feeding quality. One lot was then fed corn, another fed wheat, and still another fed wheat and corn, half and half by weight. In addition, each lot was given water, coal ashes, sulphur and salt, but no other food whatever. The experiment was conducted by Frank Ruhlen, sophomore student in the school of agriculture of the University.

The hogs were weighed two days before the beginning, two days after the beginning, and upon the day the experiment began. The average of these three weighings is taken as the initial weight. The final weights were obtained in the same way. The experiment continued during ten weeks.

The following table gives a summary of the results:

TABLE SHOWING FOOD VALUE OF WHEAT AND CORN.

	Lot A. Wheat	Lot B. Wheat and Corn.	Lot C. Corn.
Average weight Feb. 3, 10, 12—94 lbs....	411.	401.	407.
Average weight April 19, 21, 23—94 lbs...	702.	693.	678.
Gain during 10 weeks	291.	292.	271.
Gain daily per pig ..	1.39	1.39	1.29
Total food eaten during 10 weeks.....	1273.	1240.	1228.
Food eaten daily per pig.....	6.06	5.90	5.85
Pounds of food to make 100 lbs. increase	438.	425.	453.
Pounds increase from one bushel	13.7		12.3
Value of bushel at \$5.15 cwt.....	70.5		63.3
Cost of food for 100 pounds of increase corn 35c., wheat 55	4.01		2.85

The best results for the number of pounds eaten were obtained where corn and wheat was fed half and half

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by weight, the next best result obtained where wheat was fed alone, while when corn was fed alone, the least increase was made for the number of pounds of food eaten. The differences in all cases were slight.

Neither in the absolute gain in weight, the total amount of food eaten, nor in the increase made for the food consumed, were the differences greater than might be reasonably expected with three lots of carefully selected hogs fed on exactly the same kind of food.

It took 438 pounds of wheat to make 100 pounds of increase, and 453 pounds of corn to make the same gain in weight. A bushel of wheat made 13.7 pounds of pork, while a bushel of corn made 12.3 pounds. This is in part due to the different feeding value of the wheat and corn, and in part to the fact that there are 60 pounds of wheat in a bushel and only 56 pounds in a bushel of corn. The hogs sold for \$5.15 per hundred weight. Putting aside the question of labor, a bushel of wheat brought us 70 5c a bushel, and a bushel of corn 63.3c. With wheat at 55c per bushel the cost of food for 100 pounds of increase was \$4.01, while with corn at 35c per bushel, the cost of the food for 100 pounds of increase was \$2.85. According to this experiment it would have been a profitable procedure to trade wheat for corn at the ruling prices for the purpose of fattening hogs.

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Professor Allen Campbell Barrows, A. M., D. D., Professor of English Literature, was born at Hudson, Ohio, in 1839.

He graduated from Phillips' Academy, Andover, Massachusetts, in 1857 and from Western Reserve College, now Adelbert College, of Western Reserve University, in 1861. He then enlisted in the Eighteenth Regiment of United States Infantry. He remained in the war until 1864. Then he taught Latin and Greek in Phillips' Academy from June, 1865, until April, 1866, and from that date until 1870, he was Professor of Physics and Astronomy in the Western Reserve College, and from 1870 to 1871 Professor of Latin and English Literature in the same college. He was then pastor of the Congregational Church in Kent, Ohio, until 1884. For the next three years he was Secretary of the Ohio Home Missionary Society.

In 1887 he came to the I. A. C., and for one year was Professor of Latin, English Literature and History.

During his life as a soldier instead of passing his time at cards or some other worthless amusement he read Greek — largely the Greek tragedies — and became almost as familiar with it as with the English. *He is also a very successful horticulturist.* His flowers seem to vie with each other as to which shall the most fully repay him

for his faithful care of them. He has always been an unfailing source of information to the students, being so exact, so well informed and so thoroughly broad in all his views that the students trust him implicitly. In the class room he is charming — the hour seems but half the time. He always has some pleasantry to break the monotony of hard work and hold the interest of his class. If he ever feels ill-natured no one ever finds it out. To the students he is always the same kind and obliging friend, always ready to help a friend, but more ready to make the student help himself. Indeed, he exercises a greater ability nowhere than in seeming to help a student and yet make the student help himself.

Besides being appreciated as an educator, he is appreciated for himself, for he is every inch a *man* — one whom to know is but to trust and respect, and those who know him trust him implicitly. He faithfully performs every duty, no matter how small. Some think him severe in examinations, but he is so perfectly just that none can complain. In him we have a perfect example of a thorough Christian, not often found. No student is able to work under him without being inspired with a zeal for higher things, and his life seeming better worth the living. — *Iowa Bomb.*

W. B. Smith & Son, whose advertisement of Holstein cattle appears in this issue — front cover page — have offered \$50, provided the State Board of Agriculture would give a like amount in premiums for a dairy test for 1895.

Farmers in need of an ensilage or feed cutter will do well to correspond with W. R. Harrison & Co., of Massillon, O. The writer has used a Tornado for two years. (See advertisement, p. 3.)

Students, when in need of anything in the line of our advertisers, should remember the great principle of reciprocity in trade, "patronize those who patronize you."

Free Scholarships.

The following counties have been heard from as making appointments this year: Columbiana, Morgan, Muskingum, Gallia, Summit, Meigs, Ashtabula, Fairfield, Butler, Cuyahoga, Miami, Coshocton, Scioto, Medina, Highland, Lorain. Some of these still have a vacancy to fill for 1894-5. How many other counties that have appointed we do not know. We hope any such will let us know on the special blank-form postal, which has been sent for the purpose.

We have had inquiries from one to eight persons from every county in the State except the following: Ashland, Champaign, Crawford, Fayette, Hamilton, Jackson, Logan, Lucas, Marion, Noble, Vinton. These counties will do well to get out of the woods and live up to their privileges. Inquiries have been received from the following seven other States: Iowa, Illinois, Indiana, Michigan, Minnesota, New York and Pennsylvania.

One two year scholarship is due each county each year. The appointment is to be made by the county agricultural board, or in the absence of any such board, by some other county farmers' organization, as institute, grange, club, horticultural society, etc. These scholarships are worth about \$65 cash to the recipient, provided he uses it, but it is non-transferable by the holder.

The appointing power for any county decides who shall hold and use these scholarships for that county, except that the appointment must go to one who wishes to take the agricultural course, if there be such an applicant, otherwise it may be conferred upon one who wishes to take the course in *veterinary medicine*. Of course in the matter of scholarships, as in everything else at O. S. U., *ladies* are on exactly equal footing with *gentlemen*.

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The Dairy School.

A well equipped dairy department, in which the science and art of butter and cheese making are to be taught, will be a new and prominent feature of the School of Agriculture at the Ohio State University the coming year. It was in 1890 that Professor Weber suggested to a member of the board of trustees the advisability of a well equipped dairy department at the University, although the need of such instruction had been apparent to him and others for a long time. Since that time several dairy schools have been established on American soil and have been uniformly popular and successful.

The Board of Trustees recently made an appropriation to equip and maintain instruction in this branch and suitable rooms have been assigned in the Chemical Building connected with those of the agricultural chemical laboratory. These apartments will be equipped with power separators, power churn, power worker, hand separators, churns and workers of different patterns, cheese vats, presses and all the necessary accessories for the manufacture of both butter and cheese. Milk testing will be fully taught and its relation to the commercial side made prominent.

The breeds, breeding, feeding, management and judging of dairy cattle will be a part of this instruction. The management of the dairy herd, mentioned in another part of this journal, serves as an object lesson to the student.

One or more thorough specialists will be employed to give the instruction in dairying and cheese making in connection with that given by the professors of agricultural chemistry and agriculture.

This instruction will be given as part of the two years short course in agriculture. There may also be a special course of one term during the winter for those who wish to make a specialty of dairying only. It will be very much better for all who can pos-

sibly do so to enter the two years short course, so that they may have thorough preparation for the work. The dairy instruction coming as it does in the second year of this course, will be preceded by other essential branches of study, such as agricultural chemistry, physics and physiology. Those who wish to take the short course in agriculture should enter September 12th, but may enter later by making up their back work. Special announcements with regard to the details of the instruction will be given from time to time in this journal.

The business manager wishes to say that the prospects of the JOURNAL are so flattering that we expect soon to be compelled to increase the size of the paper, and the indications point strongly to a very much greater circulation than 1,500 copies, the number named in our preliminary circular to advertisers. This, in view of the fact, that but two weeks ago today the initial step was taken—the initial word spoken—toward the organization of the Board of Editors, shows the phenomenal success with which the movement has so far met. But no matter how large our paper grows or how long our subscription list, we shall not advance, this year, our rates to advertisers; as to our subscribers, they will get more for their money.

WE DESIRE to call especial attention to the article found elsewhere in this paper on the Relative Food Value of Wheat and Corn for Hogs. Considering the market value of wheat and corn, a little knowledge of this kind, if put in practice, would soon pay a subscription for the paper.

Students will do well to patronize our advertisers.

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